REPORT TO THE LEGISLATURE

Substance Use Prevention Education: A Cost Analysis

September 2012

Dear Members of the General Court:

I am pleased to submit this *Report to the Legislature: Substance Use Prevention Education, A Cost Analysis* pursuant to Section 14 of Chapter 283 of the Acts of 2010 that reads in part:

The executive office of education, in conjunction with the bureau of substance abuse services in the department of public health and the joint committees on education and mental health and substance abuse, shall conduct a study of the cost, to the state or to the individual schools or school districts, of implementing an education program for all middle and high school children whereby the children receive a minimum of 5 hours of substance abuse and addiction awareness education during each middle and high school year.

Between March 2011 and January 2012, the work group, convened by the Executive Office of Education with representatives from the Department of Elementary and Secondary Education, the Department of Public Health, the Joint Committee on Education, and the Joint Committee on Mental Health and Substance Abuse, met regularly in order to design and complete the cost analysis. To ensure that this report provided a comprehensive view of substance use prevention education, the study group engaged in the following:

- Established guiding principles, shared assumptions with which to guide the study group's research on various substance use prevention education programs, including prevention vs. awareness, the dosage and fidelity, the comprehensiveness of approach, the age to maximize impact, cost effectiveness, and curricula that address opioids;
- Commissioned an independent literature review on Effective School-Based Substance Use Prevention Programs for Middle School Students, which was completed by Dr. Toni Adams Weintraub of Health Resources in Action;
- Conducted a survey of a subset of public school districts and charter public schools to gather information regarding current practice; and
- Interviewed curriculum vendors to provide accurate cost estimates for curricula.

Pursuant to the Act's direction, the Report is being submitted to the House and Senate committees on Ways and Means, the Executive Office of Administration and Finance and the Joint Committee on Mental Health and Substance Abuse.

This report acknowledges the difficult decisions faced by school districts in determining how to allocate resources. Furthermore, this report finds that the specific substance use prevention education program offered, as well as the grade and intensity at which they are offered, represent significant factors in determining both the costs and effectiveness of programs. The Executive Office of Education looks forward to working with our colleagues in the Legislature to ensure that

this analysis and accompanying recommendations help to inform future policy. Please do not hesitate to contact the Executive Office of Education at 617.979.8347 with questions about this report.

Sincerely,

Paul Reville

Secretary of Education

INTRODUCTION

The Massachusetts OxyContin and Heroin Commission was established under Section 56 of Chapter 302 of the Acts of 2008 by the Massachusetts State Legislature to take an in-depth look at the statistics behind the opioid epidemic that has gripped the Commonwealth for more than a decade. The term "opioid" designates a class of drugs derived from opium or manufactured synthetically with a chemical structure similar to opium. Heroin is a naturally derived opioid. Other opioids such as morphine, methadone, meperdine, fentanyl, oxycodone, and codeine are used therapeutically for the management of pain and other conditions. The Commission's report (http://archives.lib.state.ma.us/bitstream/handle/2452/46748/ocn466141823.pdf?sequence=1) included several disturbing findings. One such finding was that 3,265 Massachusetts residents died of opioid-related overdoses between 2002 and 2007. Deaths related to overdose have continued to rise since 2007.

In response to the recommendations issued by the Commission, the Legislature enacted and signed into law Chapter 283 of the Acts of 2010, *An act adding safeguards to the prescription monitoring program and furthering substance abuse education and prevention*. This Act codified the state's existing prescription drug monitoring program, while expanding the program from exclusively Schedule II drugs to include Schedule II through V drugs. The Act also sought to improve availability of and access to substance abuse services statewide.

Section 14 of this Act directs the Executive Office of Education, working in collaboration with the Bureau of Substance Abuse Services at the Department of Public Health and the Joint Committees on Education and Mental Health and Substance Abuse, to study the cost of implementing an education program for middle and high school students that involves students receiving a minimum of five (5) hours of substance abuse prevention and addiction awareness education during each middle and high school year. The study group was instructed to focus the study on prescription drug abuse education, with a special emphasis upon opioid drug abuse, and to analyze the feasibility of training personnel in schools statewide to serve as substance abuse counselors.

The study group, convened by the Executive Office of Education, held regular meetings from March 2011 to January 2012. The Executive Office of Education recruited colleagues from the Department of Elementary and Secondary Education to participate in the study group. In order to gather data and information to respond to the study, the Department of Public Health commissioned Health Resources in Action (HRiA) to conduct a review of existing literature and other resources designed to identify evidence-based programs appropriate for instruction to students at the middle and high school levels. The literature review allowed the study group to focus on a small number of programs that address opioids and to use these programs as a basis for developing a cost estimate for sample districts throughout the state. The full literature review is attached in Appendix X.

In addition, the Executive Office of Education distributed a survey to select schools and districts statewide to collect data regarding current instructional practices of substance use prevention and addiction awareness education, including the grade levels at which substance use prevention

education and addiction awareness education were offered, the curricula utilized and other important details. The survey offered insight into how districts of varying enrollments provide substance use prevention education to their students. Based on the survey and the literature review, the study group developed guiding principles for the study and provided cost estimates for four different evidence-based curricula that cover the topic of opioids. The cost estimates and considerations based on findings are designed to inform future discussions within the legislature.

BACKGROUND

While opioids are the leading cause of addiction and overdose nationwide, they are not the sole problem; psychotherapeutics are also a major contributor to overdoses. A July 2010 Center for Disease Control report[1] included the finding that benzodiazepines, a sedative found in medications such as Xanax, Librium, Valium, Lunesta, and Ambien, were contributing factors for 272,000 emergency room visits nationwide in 2008. By comparison, opioid painkillers were contributing factors in 306,000 emergency room visits nationwide.

While the CDC report identifies overdose as a national issue, the northeast region is disproportionately affected. In its 2007 National Drug Threat Assessment, the National Drug Intelligence Center (NDIC) noted, "heroin poses the primary drug threat to New England – the only region in the country where this drug is the leading problem."[2] Drawing on drug intelligence data from national security, law enforcement, and public health agencies, the authors identify pharmaceutical opioid abuse as the driving factor behind this increase. Evidence suggests that pharmaceutical opioid abusers often switch from prescription medications to heroin due to its lower cost and greater purity. An overdose occurs when opioid concentrations are so high in the body that they begin to cause respiratory depression. Overdoses can be further characterized as being either non-fatal (loss of consciousness and depressed breathing) or fatal (respiration ceases and/or cardiac arrest ensues)[3]. Overdose is a common experience among opioid users.

According to a recent article that makes reference to a 2009 study by the Centers for Disease Control (CDC)[4], Massachusetts is now one of 16 states where drug overdoses exceed automobile accidents as the leading cause of accidental death. Of those deaths caused by drug overdose, opioid-based prescription painkillers were the leading cause, responsible for more deaths than heroin and cocaine combined.

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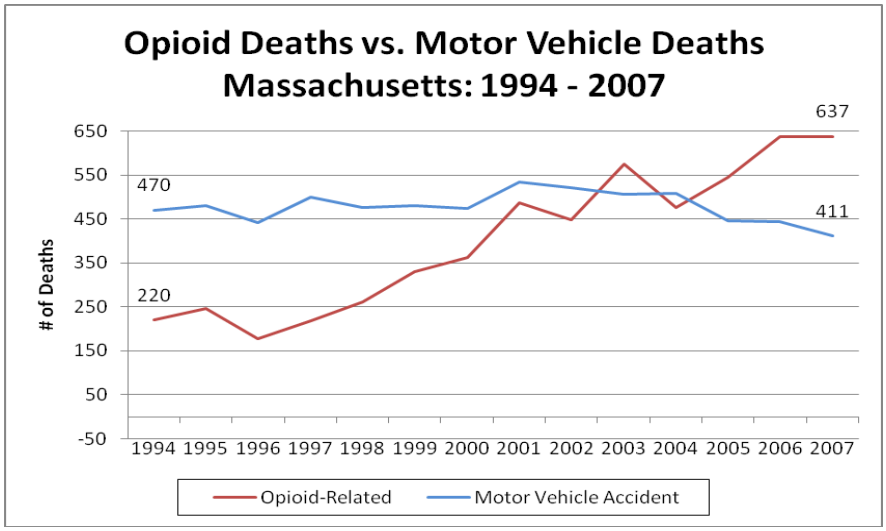
[1] Centers for Disease Control. *Vital Signs: Overdoses of Prescription Opioid Pain Relievers - United States, 1999-2008.* MMWR 2011; 60: 1-6.

[2] National Drug Intelligence Center (NDIC) (2006). National Drug Threat Assessment. (47)

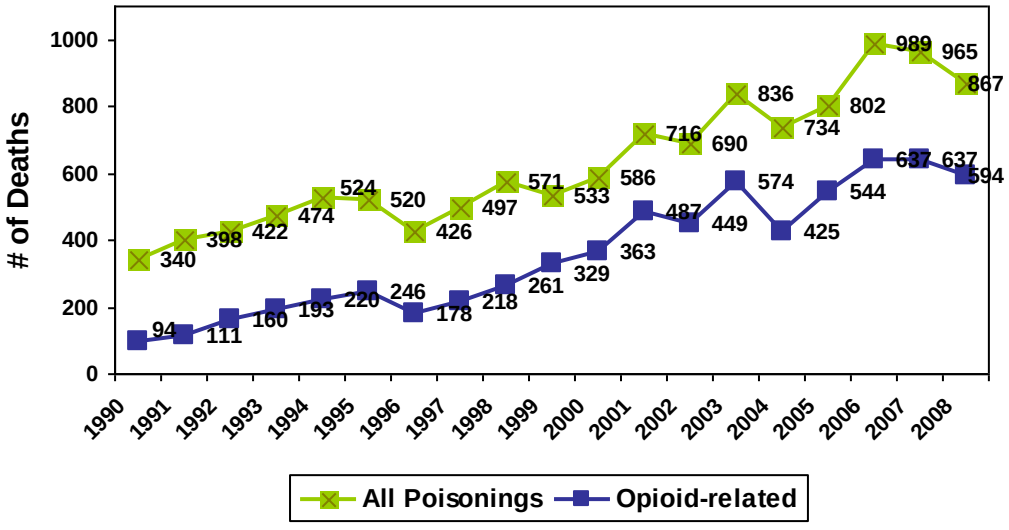
[3] Warner, M., et al (2011). Drug Poisoning Deaths in the United States, 1980 – 2008. NCHS Brief No. 81, December 2011. Centers for Disease Control and Prevention, National Center for Health Statistics.

[4] See Stobbe, M. (30 September 2009)."CDC: Drug deaths outpace crashes in more states." The Associated Press,



Source: Massachusetts Department of Public Health.

All sedating medications carry overdose risks on their own; however when drugs are combined, for example, when opioids are mixed with other drugs, the risk is substantially increased because the drugs typically use different mechanisms in the body to create sedation. Benzodiazepines (benzos) are sedating drugs including alprazolam (Xanax), chlordiazepoxide (Librium), lorazepam (Ativan), clonazepam (Klonopin), and diazepam (Valium) that are typically prescribed to treat anxiety disorders, insomnia, tremors, and alcohol withdrawal. In Massachusetts, the combination that most often results in multi-drug overdoses involves benzodiazepines being taken along with heroin. Benzodiazepines are particularly dangerous for two reasons; they are long acting and they impair short-term memory. This combination of effects can result in someone forgetting how many "benzos" or how much heroin was used, and as a result, end up taking more. Despite this danger, benzodiazepines are appealing to people with opioid dependence for several reasons, including that they can reduce the anxiety that comes with withdrawal, they can increase the euphoria from using opioids, and they are prescription medications and thus thought to be safe. Educating students about the risks of mixing opioids and benzodiazepines is a key component of overdose prevention.



It is important to note that although the number of opioid-related deaths declined from 2005-2008, this is likely not the result of decreased drug use; rather, the increasing availability of Narcan, a nasal spray that temporarily reverses the effects of a drug overdose. A recent study by the Boston Public Health Commission asserts that Narcan has been used to reverse 1,000 overdoses since 2007.

There is reason to be hopeful about the potential positive impact of substance use prevention education. Recent studies indicate that there has been some success in the fight to reduce drug use among teenagers. The number of teens who reported drinking or smoking cigarettes (excluding smokeless tobacco) continues to trend downward, as has use of illicit drugs such as cocaine, heroin and methamphetamine. Overall, the number of students reporting actively abusing drugs and alcohol dropped from 57.8 percent in 1999 to 46.1 in 2009.[5] However, there continues to be concerning trends when it comes to teenagers' attitudes towards the use of certain substances.

Substance Use Disorders Among Persons 12 and Older
(by age of first use)

Age	Percent
Before 15	28.1
15-17	18.6
18-20	7.4
21+	4.3

Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.

The 2010 *Monitoring the Future*[6] study, which includes data dating back to 1975, found that 12th graders increasingly see less risk associated with using certain drugs. For example, 46.8 percent of 12th graders in 2010 saw "great risk" in smoking marijuana regularly, compared to 76.5 percent in 1992. Approximately fifty-two percent saw "great risk" in using sedatives regularly, compared to 70.2 percent in 1992. According to the study, significant reductions in perceived risk also exist for cocaine and binge drinking. During the 2010 study, just 40 percent of students saw "great risk" in experimenting with prescription narcotics; 2010 was the first year this question was included in the study. The number of students reporting they had been exposed to substance abuse prevention messages both inside and outside of school has also declined since 2002.

Although the number of students self-reporting drug use appears to have plateaued, the overall number of adolescents experimenting or abusing drugs remains a concern. In 2009, nearly one-quarter (24.2 percent) of high school students reported binge drinking within the past 30 days. More than one-third (36.8 percent) of high school students had tried marijuana over the course of their lives, with one in five (20.8 percent) high school students reporting that they use the drug regularly. In addition, 20 percent will have tried prescription drugs by their senior year of high school. Prescription drug abuse among adolescents continues to be a growing concern. While marijuana by far is the most likely to be abused, with 31 percent of 12th graders reporting using it to get high, almost 10 percent said they had used Vicodin, followed by amphetamines, sedatives,

[5] http://www.casacolumbia.org/upload/2011/20110824teensurveyreport.pdf

[6] http://monitoringthefuture.org/pubs/monographs/mtf-overview2010.pdf

tranquilizers, and cough medicine. Cocaine/crack was next, trailed by OxyContin, cocaine (powder only), Ritalin and inhalants.

Substance Abuse Among School-Age Youth

Studies such as the *National Survey on Drug Use and Health*, formally called the *National Household Survey on Drug Abuse*, reported by the Substance Abuse and Mental Health Services Administration (SAMHSA), and the *2011 America's Children: Key National Indicators of Well-Being* report make the compelling case for starting substance use prevention education early. SAMHSA's *National Survey* indicates that some children are already abusing drugs at age 12 or 13, which likely means that some begin even earlier. Early abuse often includes such substances as tobacco, alcohol, inhalants, marijuana, and prescription drugs such as sleeping pills and anti-anxiety medicines. If drug abuse persists into later adolescence, abusers typically become more heavily involved with marijuana and then advance to other drugs, while continuing their abuse of tobacco and alcohol
The *America's Children* report found that the number of 8th graders reporting illicit drug use in the previous month had risen from 8 percent in 2009, to 10 percent in 2010.[7]

In addition, the 2011 CASA study[8] suggests that by 9th grade, two-thirds (67.0 percent) of students have used at least one substance, with 5.3 percent of 14-year-olds meeting the clinical definition of having a substance abuse disorder. The study reports, "Teen substance use is, in fact, more prevalent than many other risky health behaviors facing teens today, including being overweight, experiencing symptoms of depression and being a victim of bullying."[9]

Of individuals with substance abuse problems, 28.1 percent report having started experimenting with drugs and alcohol before their 15th birthday.[10] That number drops to 4.3 percent for those who reported waiting until after they turned 21 to first try drugs or alcohol. Among people who used any substances before age 18, one in four have a substance disorder, compared with one in 25 of those who started to smoke, drink or use other drugs at age 21 or later. [11]

These studies are cause for concern, and support the need for education before students reach high school. Studies have repeatedly shown that the earlier an individual begins experimenting

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[7] http://www.childstats.gov/americaschildren/beh3.asp

[8] http://www.casacolumbia.org/upload/2011/20110824teensurveyreport.pdf

[9] Adolescent Substance Abuse: America's #1 Public Health Problem.

[10] http://www.casacolumbia.org/upload/2011/20110629substanceuseslides.pdf

[11] *Adolescent Substance Abuse: America's #1 Public Health Problem,* The National Center on Addiction and Substance Abuse at Columbia University, June 2011

with drugs and alcohol, the more harm is done to the physiological development of the brain, and the greater the likelihood that person will have a substance abuse problem later in life.

It is also important to note that significant developmental changes occur during adolescence. Research shows that for educational interventions to be effective, they must be delivered throughout this developmental period. It is highly recommended to choose a program that offers "booster sessions" in subsequent years to reinforce prevention messages and acquired skills.

Funding to Support Substance Use Prevention and Addiction Awareness Education

The federal Drug-Free Schools and Communities Act was signed into law by President Reagan in 1986. This law, reauthorized in 1994, and re-named the *Safe and Drug-Free Schools and Communities Act* provided federal funds to support substance use and violence prevention education in schools nationwide. Between 1997 and 2009, approximately $9.5 billion dollars were made available nationally to school districts through an entitlement grant program. However, these funds were eliminated in Fiscal Year 2010, and as a result, no Massachusetts schools or districts received funds from the Act after August 31, 2011.

Within Massachusetts, the Health Protection Fund was created by a 1992 state legislative referendum that directed tax revenue on tobacco production to the Department of Education (now the Department of Elementary and Secondary Education). These funds were used on tobacco prevention and cessation and other substance use prevention education in the context of comprehensive health education in schools throughout the Commonwealth. Approximately $24 million dollars were provided directly to districts starting in school year 1993 on an annual basis. Beginning with Fiscal Year 2003, these funds were no longer used to fund prevention services statewide.

Substance use prevention education is not currently being provided at all middle and high school grade levels. It is generally taught as a component of health education courses, and health education courses are most frequently provided at the middle school and ninth grade levels. All districts responding to our study reported instruction at the ninth grade level, among other grades.

Summary of Related Initiatives of the Massachusetts Bureau of Substance Abuse Services

Prevention Programs: The Bureau of Substance Abuse Services, through Federal Block Grant funding from the Substance Abuse Mental Health Services Administration (SAMHSA), funds 31 community-based prevention programs. All programs, utilizing SAMHSA's Strategic Prevention Framework, implement evidence-based programs/strategies to prevent alcohol, marijuana, and other drug abuse with a particular focus on the under-21 population. Each program focuses on a specific municipality or neighborhood and is carried out by a coalition comprised of organized community members that have an interest in helping their community to prevent substance abuse.

MassCALL2: Massachusetts was awarded a Strategic Prevention Framework State Incentive Grant (SPF-SIG) in October 2006 from the Substance Abuse and Mental Health Service Administration's Center for Substance Abuse Prevention. As part of this grant, Massachusetts

funded 15 communities with a three-year average of 30 or more unintentional fatal or non-fatal opioid overdoses to implement a variety of evidence-based overdose prevention strategies. The strategies are designed to: (1) prevent overdose from occurring, (2) minimize negative/fatal consequences when an opioid overdose does occur, and (3) prevent future overdoses through facilitating access to/utilization of treatment services. Implementation at the local level began in July 2008 and will run through September 30, 2012.

In addition, BSAS has been implementing a comprehensive opioid overdose prevention strategy that is driven by three overarching goals, each with a subset of specific aims:

- Reduce the incidence of fatal and non-fatal overdose – prevent overdoses from occurring
- Improve the management of overdose if it occurs
- Reduce the amount of misused, abused, and diverted prescription opioids.

These are some of the highlights that are currently being implemented as part of its comprehensive plan:

- Provide training and education to users, treatment providers, families, correctional staff, shelter providers, needle exchange programs, police, and other first responders on the identification and intervention of drug overdoses (BSAS Overdose Prevention Materials)
- Increase the timely access of drug users to a range of evidence-based treatment services; including medication assisted treatment (Office Based Opiate Treatment: OBOT)
- Provide education on overdose prevention for all substance abuse treatment providers with an emphasis on integration of overdose prevention education into their work with clients (SPHERE Trainings)
- Establish a statewide bystander intra-nasal naloxone distribution pilot in collaboration with HIV/AIDS prevention and education programming (Narcan Distribution Pilot)
- Implement and expand emergency department intervention and referral to treatment services (ED SBIRT Programs)

ABOUT THE STUDY

Guiding Principles

The study group developed a set of guiding principles, which are shared assumptions to guide the research and cost study of evidence-based substance use prevention and addiction awareness education programs.

Prevention vs. Awareness: There is strong evidence[12] suggesting that awareness or "information only" education programs, including scare tactic strategies regarding the consequences of alcohol and drug use and abuse, are ineffective or insufficient. The most effective substance abuse prevention programs have been found to be those programs based on the social influence model, which are delivered interactively, are general rather than specific to one substance (for example, opioids), are skilled-based (for example, teach skills to help young people refuse drug offers and pro-drug influences), correct misconceptions that drug use is normative, and enhance social and personal competence skills.[13] As a result, the study group chose to focus on prevention instead of awareness and chose to develop cost estimates for curricula that focus on substance use prevention.

Dosage and Fidelity: As described by SAMHSA, fidelity to program intensity, defined as following a program as designed, is one of the keys to ensuring maximum effectiveness of an evidence-based program. Unfortunately, it is this aspect of a program that is most likely to be changed, due to budgetary and time constraints or in an attempt to make the program more appealing to participants. Dosage also plays an important role. For example, a program designed for seven weekly sessions may not have the same effect if all the content is presented in two full-day sessions. Even though all the content may be covered in an altered program, participants will not have time to assimilate and practice the new skills they are learning to integrate into their everyday behavior. Similarly, condensing the material to limit the program to four weekly sessions will likely reduce the program's effectiveness, lead to critical content being left out inadvertently and potentially increase the risks of failure by reducing participants' contact with the instructor and material. It is important for instructors to follow the program's guidelines for how often the program meets, the length of each session, and how long participants stay involved with the program. Unless any proposed program adaptations are reviewed and approved by the program developer, altering a structured prevention program is not recommended since it would not have the desired results.

Alcohol, tobacco and drug prevention education are oftentimes part of a larger health education course offered to students. Bearing in mind the principles of dosage and fidelity, the study group decided not to limit its cost study to five hours (as specified in the legislative study language - *see*

[12] National Research Council and Institute of Medicine (2004). Reducing underage drinking: A collective responsibility, background papers. Committee on Developing a Strategy to Reduce and Prevent Underage Drinking, Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.

[13] Health Resources in Action (2011). Effective School-Based Substance Use Prevention Programs for Middle School Students Literature Review. Boston, MA.

page X) since five hours would be an insufficient amount of time to ensure the material being delivered will produce the desired outcome.

Comprehensiveness of Approach: Implementation of curricula should ideally be connected to existing evidence-based substance abuse prevention strategies within individual communities. These include environmental strategies and should involve all pertinent stakeholders such as municipal government, law enforcement agencies, community members (including youth, parents, and families), substance abuse prevention and treatment professionals, and other human service organizations that represent the diversity of the community.

Age to Maximize Impact: Although the study group's enabling language requires this study to present findings related to beginning substance use prevention education prior to 9th grade, it is the general consensus of the study group that substance use prevention education should begin as early as 6th grade. The studies mentioned in the previous section (on the age at which students begin experimenting with substances) are cause for concern, and support the assertion that education is needed before students reach high school. Studies have repeatedly shown that the earlier an individual begins experimenting with drugs and alcohol, the greater harm is done to the physiological development of the brain, and the greater the likelihood that person will have a substance abuse problem later in life.

Cost Effectiveness: Another principle guiding this study is cost effectiveness. Cost is a significant factor for school districts to consider when deciding which programs to implement. In addition to focusing on curricula shown to be effective, districts must also consider both the cost for the curricula and materials and expenses for training and/or professional development of relevant staff. While some programs allow for districts to participate in a train-the trainer model, other programs mandate the use of their training staff, resulting in high costs for districts. These elements were included in the cost estimates summarized in the Cost Analysis section on page 13.

Curricula that Address Opioids: The literature review identified several school-based programs considered to be evidence-based and effective in preventing the use and abuse of alcohol and drugs (including opioids). The survey revealed an additional health education program commonly used by districts throughout the state. The study group researched each program, and contacted the vendors or developers for each program to determine the cost and feasibility of implementation. The study group advises that selected program(s) should be evidence-based or evidence-informed, include a full curriculum and booster sessions (if part of selected prevention program), and be incorporated into the school day.

The study group also faced difficulty in finding substance use prevention education programs specifically focused on opioid use, as outlined in the legislative charge. However, the study group was able to find programs focused on life and decision making skills, which will undoubtedly help students when confronting the issue of opioid use. It should also be noted that while opioid use represents a growing issue in certain communities in the Commonwealth, the study group thought that overall decision making and life skills would be beneficial to all communities dealing with a variety of controlled substances, tobacco, drugs, and alcohol. The four programs upon which the

cost study was based are **Michigan Model for Health, Botvin LifeSkills Training, All Stars and keepin' it REAL.**

The **Michigan Model for Health** is a comprehensive, sequential K-12 health education curriculum that includes age-appropriate lessons addressing social and emotional health, nutrition and physical activity, alcohol, tobacco and other drugs, personal health and wellness, safety, and HIV. The **Botvin LifeSkills Training (LST)** is a research-validated substance use prevention program that has been proven to reduce the risks of alcohol, tobacco, drug abuse, and violence through targeting the major social and psychological factors which promote the initiation of substance use and other risky behaviors. The **All Stars** program is a multi-year school-based program for middle school students designed to prevent and delay the onset of high-risk behaviors such as drug use, violence, and premature sexual activity. The **"keepin' it REAL"** program is an effective, multicultural middle school drug prevention program that has been shown to reduce alcohol, marijuana, and tobacco use. For more information on these four programs, please see the section in the Appendix entitled "Relevant Curricula."

Survey Instrument and Results

To begin to understand the costs associated with implementing curriculum on substance use prevention education and addiction awareness, the study group created an online survey which was sent to a representative sample of schools and school districts throughout the state. These included seventeen (17) kindergarten through grade 12 school districts, seven regional school districts, four charter schools, and four vocational/technical high schools. The sample schools were selected based on geographic representation and because substance prevention education programs are currently being implemented in their district.

The survey asked the following questions:

- At what grade level(s) does your district/school provide substance use prevention education?
- At what grade level(s) does your district provide addiction awareness education?
- What curricula are you currently using to teach substance use prevention and/or addiction awareness?
  If you are not using curricula, please indicate if you are using some other type of training or educational tool (please be specific).
- Are the curricula implemented with fidelity (implemented just as the curriculum was designed without changes)?
- Are substance use prevention and addiction awareness education part of or separate from an overall comprehensive health education program?
- To what extent do the units taught in your district on substance use prevention and addiction awareness cover the following topics (through curricula and related activities)?

- Who is responsible for teaching lessons on substance use prevention and addiction awareness?
- In the grades in which substance use prevention education is offered, please estimate the number of hours spent on this topic.
- In the grades in which addiction awareness education is offered, please estimate the number of hours spent on this topic.
- How much does the district spend annually on providing substance use prevention and addiction awareness education?
- Please estimate the cost to your district to provide five (5) hours of substance use prevention and addiction awareness education to all middle and high school students annually.
- How have the substance use prevention and addiction awareness curricula and activities been funded in the past?
- Please list any outside organization and/or local agencies involved in providing substance use prevention and addiction awareness education lessons, role play, activities or materials to your schools.

COST ANALYSIS

In Massachusetts, school districts exercise local control so that the state sets standards and local districts choose curricula to meet these standards. Because of this, the study group decided to provide cost analyses for multiple programs, so that school districts could get a sense of which type of program may be the best fit - considering both content and cost - for their district. Using the results of the survey, the work group considered the programs currently being implemented by school districts throughout the state as well as those recommended by the literature review.

Based on the survey and the findings of the literature review, the study group chose four substance use prevention programs that met the criteria outlined in this report (comprehensiveness, prevention focused, age at which the curriculum is most effective, cost effectiveness and the coverage of opioids). To prepare for the cost analysis, the study group recognized that the structure and pacing of the four programs were not aligned with the requirements outlined in the legislative charge, to educate all students in middle through high schools for a minimum of 5 hours each year on substance use prevention and addiction awareness. Consequently, the study group worked with the Chairs of the Joint Committee on Education and the Joint Committee on Mental Health and Substance Abuse to meet the intention of the legislative charge: to determine the cost of educating middle and high school students effectively and comprehensively on substance use prevention.

Two factors weighed heavily into the cost analysis. First, Massachusetts is home to many school districts, whose size, student composition, and structure vary greatly. Second, each substance use prevention program in this study has a unique structure, including pacing, curriculum, student materials, and methodology, as well as multiple training options. To account for these factors, the study group decided to determine the cost of implementing four types of substance use prevention programs in a range of sample districts representing urban, rural-regional, suburban communities, and a charter school. The study group therefore chose not to estimate the cost of implementing a single program statewide. **Consequently, conclusions should not be made on the overall cost to the state of implementing substance use prevention education based on the findings of this report.**

The cost analysis was conducted with the assumption that each school district must start from scratch in building their substance use prevention education program, which would involve training district personnel in the delivery of specific curricula. The cost analysis, however, assumes that the district personnel have already been hired, and does not include salary or benefits for these personnel. The study group also chose not to include travel and lodging costs, as these vary greatly and are subject to change over time.

The cost per student for various materials was calculated based on October 2011 student enrollment figures in sample districts and these figures are likely to fluctuate. The cost analyses should be considered accurate as of November 1, 2011. Often, education programs change and evolve, and it is important that these costs are not viewed as definitive. The study group also based the cost analyses on the assumption that each district trains one trainer per school district, in addition to the number of personnel proportional to the size of the district (ranging from 1 to 67

individuals). In reality, larger districts may train two or more trainers to serve the entire district, if they deem that to be cost effective.

School District Profiles

Sample District	Grade Level	Number of Students	Number of Staff Requiring Training
Rural Regional	6	267	11
	7	296	
	8	303	
	9	331	
	10	328	
	11	310	
	12	288	
Large Urban	6	1,680	67
	7	1,533	
	8	1,547	
	9	1,872	
	10	1,694	
	11	1,552	
	12	1,532	
Urban	6	956	20
	7	987	
	8	877	
	9	854	
	10	563	
	11	814	
	12	548	
Suburban	6	465	12
	7	436	
	8	479	
	9	401	
	10	416	
	11	390	
	12	410	
Urban	6	428	20
	7	398	
	8	426	
	9	562	
	10	442	
	11	462	
	12	431	
Charter Public School	6	118	1
	7	121	
	8	118	
	9	106	
	10	110	
	11	80	
	12	62	

Program Costs

The range in program costs demonstrated by the charts in this section represent the potential costs to the sample districts when choosing a specific program and training model. Clearly, the size of the school district and number of staff needing training greatly affects the cost. For districts using the Michigan Model, costs can range from $3,411 to $12,899 for the Train the Trainer model and from $6, 561 to $24, 273 with the Direct Teacher Training model. Use of the latter represents a more significant cost to districts. The Life Skills program also presents a large range in costs, depending on which type of training model a district chooses. For districts with a higher number of students, costs can range between $25, 548 and $46, 230. In the All Stars program, costs can range from $1,631 to $8,624 for smaller districts, depending on whether districts choose online, on-site, or off-site training models. Finally, Keepin it Real with its one training option, represents a less expensive option for many districts.

Michigan Model

Range in Costs per district for the **Train the Trainer** for Grades 6 through 9	Range in Costs per district for the **Direct Teacher Training** for grades 6-9
Low end: $3,411 Middle: $4, 713 High end: $12, 899	Low end: $6,561 Middle: $9, 985 High end: $24,273

Life Skills

Range in Costs per district for the **Online Training** for Middle and High School	Range in Costs per district for the **Training of Trainer** for Middle and High School	Range in Costs per district for the **On-Site** for Middle and High School
Low end: $690 Middle :$8,280 High end: $46,230	Cost for one training session (25 participant maximum): $4,195	Low end: $1,628 Middle: $4,048 High end: $25,548

All Stars

Range in Costs per district for **Live Online Provider Training for Core, Booster, Plus, and Senior**	Range in Costs per district for **On Site Training for Core, Booster, Plus, and Senior**	Range in Costs per district for **Off Site Workshops for for Core, Booster, Plus, and Senior**
Low end: $1,874 Middle: $16,230 High end: $81,362	Low end: $8,624 Middle:$14,294 High end: $44,612	Low end: $1,631 Middle: $14, 294 High end: $72,987

Keepin' it Real

Range in Costs per district for **curriculum, materials and on-site training (max capacity of 20-25 educators/training)**
Low end: $1,550 High end: $4,050

SUMMARY OF FINDINGS & CONSIDERATIONS

- **Ensure school-based programs are culturally appropriate and part of a broad community-based strategy.** In order to obtain best results in preventing substance abuse among children and youth, it is essential that the community design a comprehensive prevention program that includes a school-based program that is culturally appropriate. Programs implemented in school should be connected to existing environmental substance abuse prevention strategies within individual communities and include all pertinent stakeholders such as municipal government, law enforcement agencies, community members (including youth and their families), substance abuse prevention and treatment professionals and other human service organizations that represent the diverse populations within a specific community.

- **Focus on prevention and promotion of healthy behaviors.**
  An effective substance use prevention education strategy involves both prevention of unhealthy behaviors and promotion of healthy ones. Consistent messages, reinforced over time by educators, family members, peers and the broader community, can help to equip students with the knowledge necessary to resist negative influences and maximize protective factors.

- **Experience from the field indicates that evidence-based programs, programs that have undergone scientific evaluation, that are implemented with complete fidelity are most likely to be effective in producing the desired outcomes.** Fidelity refers to programs designed, tested and implemented by the developer. If a program is administered in a manner that departs from the original model, for example, by number of sessions, or location of sessions, the program no longer has fidelity and cannot be called an "evidence-based program."

- **Five hours is insufficient.**
  Analysis of various substance use prevention education programs indicates that five hours of instruction per grade level is insufficient. In addition, research demonstrates that experimentation increases with age. If students are to remain substance-free, booster sessions should be provided for high school students in grades 9-12 to assist them in ongoing skill development and practice.

- **Because of limited resources and a lack of a federal or state funding stream to support districts' implementation of curricula including lessons on substance use prevention, the cost effectiveness of programs is a key factor in districts' decisions to adopt one curricula over another.** Cost savings could be realized if districts choose to participate jointly in training sessions. Many of the programs examined through the cost analysis offer "train the trainer" options. Through this model, each district need send only one staff member to be trained on a particular

program. Thus, regardless of the number of staff in a given district, one staffer who attends the "train the trainer" session can train however many staff are needed to instruct students in the district on substance use prevention education. The Department of Elementary and Secondary Education should provide districts with information on where particular "train the trainer" sessions will be occurring and assist districts in coordinating with other districts to send a staff member to be trained.

- **Cost for implementing these programs for districts ranges from $690 to $81, 362, not including travel and lodging if applicable.** Factors include whether the training is offered online or in person, the number of staff needing training, the number of students needing materials (often not including shipping and handling costs), and whether certain programs offer free materials online. Clearly, any school district in the state looking into potentially offering a program should look at a variety of programs to find the most cost effective model for their particular district.

- **Training and continual professional development are essential to produce the desired outcome.** Ongoing professional development is necessary due to the changing nature and trends in substance use. Prevention programs regularly update their materials and trainings as necessary. School district staff must be up to date on current best practices in order to implement programs with fidelity.

- **Substance use prevention education programs must be piloted prior to statewide implementation to determine efficacy.**

CONCLUSION

Opioid use will continue, and has the potential to increase, without a true prevention and intervention strategy that includes school-age youth. Research demonstrates that consistent prevention education activities should begin in the 6th grade and continue through high school. However, without specific funds designated for this purpose, a comprehensive opioid and related substance use prevention education and intervention program cannot be established, expanded throughout the Commonwealth, and sustained.

APPENDIX A:

Legislative Language:

Section 14 of Chapter 283 of the Acts of 2010:

SECTION 14. Notwithstanding any general or special law to the contrary, the executive office of education, in conjunction with the bureau of substance abuse services in the department of public health and the joint committees on education and mental health and substance abuse**, shall conduct a study of the cost, to the state or to the individual schools or school districts, of implementing an education program for all middle and high school children whereby the children receive a minimum of 5 hours of substance abuse and addiction awareness education during each middle and high school year.** The study shall include, but not be limited to, information on prescription drug abuse education, with particular emphasis upon opioid drug abuse, healthy lifestyles, peer pressure and intervention opportunities, the feasibility of training employees in the schools as substance abuse counselors, including, but not limited to, teachers, nurses, guidance counselors and custodians and other activities a school might take to prevent drug abuse.

The report shall be submitted not later than December 31, 2011 to the house and senate committees on ways and means, the executive office of administration and finance and the joint committee on mental health and substance abuse.

APPENDIX B: Relevant Curricula

Michigan Model for Health

The Michigan Model for Health is a comprehensive, sequential K-12 health education curriculum that includes age-appropriate lessons addressing social and emotional health, nutrition and physical activity, alcohol, tobacco and other drugs, personal health and wellness, safety, and HIV. The Michigan Model utilizes a variety of interactive teaching and learning techniques, emphasizing skill development. For more information, please visit http://www.emc.cmich.edu/mm/.

The Michigan Model features two training options:

1) Train the Trainer:

- The Train the Trainer program for the Michigan Model costs $950 per person, and each session is limited to a maximum of 20 people per instructor. The cost of training does not include travel and lodging, and the training lasts three days. Curricula and student materials for different grades must be purchased separately.

2) Direct Teacher Module Training:

- The cost of the one day Direct Teacher Module Training, assuming this training takes place in Massachusetts, ranges from $1,200 to $2,000 (including the trainer's travel and lodging). For the purpose of this study, we developed a cost estimate for this option with the assumption that this training was $2,000. Curriculum and student materials for each grade must be purchased separately.

The Michigan Model has different curricula for 6th grade, 7-8th grade, and 9th grade levels. The costs for each year are listed below. While the Michigan Model includes a variety of resources, the Study group attempted to calculate only the costs for the most essential aspects of the program so as to meet the cost effective criteria laid out in this report. For materials, student workbooks were only necessary for lessons in grade 6.

Grade 6:
Health Teacher Manual: $55.00
Student workbook: $3.75

Grades 7-8:
Protect a friend- share your skills: Alcohol, Tobacco, and Other Drugs Curriculum: $32

Grades 9:
Teen Voice Solutions to Alcohol, Tobacco, and Other Drugs-Curriculum: $32

Botvin Life Skills Training

"Botvin LifeSkills Training (LST) is a research-validated substance abuse prevention program proven to reduce the risks of alcohol, tobacco, drug abuse, and violence by targeting the major social and psychological factors that promote the initiation of substance use and other risky behaviors."[14]

The Life Skills Training features three training options:

1) Online trainings:

- The online trainings cost $235 per person. This does not include the cost of the curricula per teacher.

2) Train the Trainers:

- The Train the Trainers session is limited to a maximum of 25 people per instructor. The cost of the training session is $1070. Curriculum must be bought separately.

3) On-Site Training Workshops:

[14] http://www.lifeskillstraining.com/overview.php

- The On-Site Training workshop is limited to a maximum of 20 people per instructor. Each additional person costs an extra $200. The cost of this workshop is $3,500, and an additional $1,200 for trainer travel costs.

The Middle School Curriculum covers grades 6-8 and costs $125 per curriculum plus the costs of shipping and handling. The High School Curriculum is for grades 9 or 10 and costs $95 per curriculum plus the costs of shipping and handling. Companion websites for students and teachers are free.

All Stars

All Stars is a multi-year school-based program for middle school students designed to prevent and delay the onset of high-risk behaviors such as drug use, violence, and premature sexual activity.

The program focuses on five topics: developing positive ideals that do not fit with high-risk behavior; creating a belief in conventional norms; building strong personal commitments; bonding with school, pro-social institutions, and family; and increasing positive parental attentiveness. All Stars includes group activities, games, small group discussions, one-on-one sessions, a parent component, and a celebration ceremony. The All Stars Core program consists of 13 45-minute class sessions delivered on a weekly basis by teachers, prevention specialists, or social workers. The booster program is designed to be delivered one year after the core program and includes nine 45-minute sessions.

For more information: http://nrepp.samhsa.gov/ViewIntervention.aspx?id=28

The All Stars Program features three training options:

1) Live Online Training:

- For the All Stars Core (the Middle School program), online training is completed in four 2 hour modules and costs $300 in total per person. For the Booster, Plus, and Senior components of All Stars, each training is 4 hours and the live online training is completed for each component in 2 two hour sessions. Each component training (Booster, Plus, Senior) costs $150 per person.

2) On-Site Training:

- On-Site Training for the All Stars Core costs $1500 a day and the training lasts for two days, so the total cost is $3,000, not including the trainer's travel and lodging expenses. For the Booster, Plus, and Senior on-site training sessions, the cost is $1500 per training for each component, including the trainer's travel and lodging expenses. On-Site trainings are limited to a maximum of 20 people per instructor.

3) Off-Site Training:

- Off-Site Training costs $250 for the All Stars Core training, which lasts two days. The Off-Site training costs $125 for the Booster, Plus, and Senior programs, respectively. Participants are responsible for their own travel and lodging expenses.

To meet the cost effective criteria, we priced out the teacher's curriculum and the basic student package. The All Stars Core teacher's manual costs $100, the Booster teacher's manual costs $80, the Plus teacher's manual also costs $80, and the Senior manual on Alcohol, Tobacco, and Other Drugs costs $35. The basic student package for All Stars Core costs $4 per student. The basic student package for the booster costs $1 per student, and the basic student package for Plus costs $2 per student.

keepin' it REAL (Refuse, Explain, Avoid, and Leave)

The "keepin' it REAL" program is an effective, multicultural middle school drug prevention program that has been shown to reduce alcohol, marijuana, and tobacco use.

According to the program's literature, the keepin' it REAL program teaches students to think critically and communicate effectively.[15] The lessons include information on risk assessment, decision making, and communication skills including conflict resolution and drug refusal. REAL stands for the resistance strategies - - that teens can use to negotiate drug offers. These strategies are based on the narrative stories from thousands of adolescents describing the teen world in their own words, especially their experiences with offers of alcohol, cigarettes, marijuana, and other drugs.

The multimedia, multicultural middle school prevention program, geared toward 7th graders, consists of ten school lessons and five videos developed by youth. The program includes a series of boosters designed for delivery in 8th grade. A high school curriculum is currently under development. In order to fit the requirements of the study language, if a school district were to implement substance abuse prevention education programs for all middle and high school students, the "keepin' it REAL" program would have to be accompanied by a separate, complementary high school curriculum.

The keepin' it REAL program offers one training option. On-site trainings (with a maximum of 20-25 people in each) cost $1,000 per day plus travel expenses. There is an additional small administrative cost for materials, which we estimate to be around $50. Keepin' it REAL staff would travel to Massachusetts and provide training in either a train-the-trainer or train teachers directly.

Curriculum is $500 for each school set (covering the grade 7 curricula and grade 8 booster). Penn State, the program developers, offer volume discounts. In addition, the district would own the rights to the curricula and, thus, would be able to photocopy and duplicate materials.

[15] http://www.kir.psu.edu/about.shtml

APPENDIX C: Cost Estimate Calculations

Life Skills	Online provider training (MS)	Training of the Trainer (MS) (cost of training for one session of 25 people)	Onsite Workshops (MS)	Online provider training (HS)	Training of the trainer (HS)(cost of training for one session of 25 people)	On-site workshops (HS)
Rural Regional (11 staff)	$3,960.00	$4,195.00	$2,079.00	$3,630.00	$3,445.00	$1,749.00
Large Urban (67 staff)	$24,120.00		$18,479.00	$22,110.00		$7,069.00
Urban (20 Staff)	$7,200.00		$3,204.00	$6,600.00		$2,604.00
Suburban (12 Staff)	$4,320.00		$2,204.00	$3,960.00		$1,844.00
Urban (20 staff)	$7,200.00		$3,204.00	$6,600.00		$2,604.00
Charter Public School (1 staff)	$360.00		$829.00	$330.00		$799.00

Life Skills	Total cost for Online Training for Middle and High School	Training of Trainer Total	Total Cost for On Site Training for Middle and High School
Rural Regional (11 staff)	$7,590.00	N/A	$3,828.00
Large Urban (67 staff)	$46,230.00	N/A	$25,548.00
Urban (20 Staff)	$13,800.00	N/A	$5,808.00
Suburban (12 Staff)	$8,280.00	N/A	$4,048.00
Urban (20 staff)	$13,800.00	N/A	$5,808.00
Charter Public School (1 staff)	$690.00	N/A	$1,628.00

Michigan Model	Grade 6 Train the Trainer plus Materials (3 days)(Assumption that each district sends 1 trainer)	Grade 6 Direct Teacher Training Module plus Materials (1 day)	Grades 7 to 8- train the trainer plus Materials (3 days) (Assumption that each district sends 1 trainer)	Grade 7 to 8 to direct teacher training module plus materials (1 day)	Grade 9 Train the trainer plus materials (Assumption that each district sends 1 trainer)	Grade 9 direct teacher module training plus materials (1 day)
Rural Regional (11 staff)	$2,006.25	$3,606.25	$982.00	$2,352.00	$982.00	$2,352.00
Large Urban (67 staff)	$10,935.00	$15,985.00	$982.00	$4,144.00	$982.00	$4,144.00
Urban (20 Staff)	$4,590.00	$6,685.00	$982.00	$2,640.00	$982.00	$2,640.00
Suburban (12 Staff)	$2,748.75	$4,403.75	$982.00	$2,384.00	$982.00	$2,384.00
Urban (20 staff)	$2,610.00	$4,705.00	$982.00	$2,640.00	$982.00	$2,640.00
Charter Public School (1 staff)	$1,447.50	$2,497.50	$982.00	$2,032.00	$982.00	$2,032.00

Michigan Model	Grades 6,7-8, 9 Train the Trainer total	Grades 6,7-8, 9 Direct Teacher Training total
Rural Regional (11 staff)	$3,970.25	$8,310.25.00
Large Urban (67 staff)	$12,899.00	$24,273.00
Urban (20 Staff)	$6,554.00	$11,965.00
Suburban (12 Staff)	$4,713.00	$9,172.00
Urban (20 staff)	$4,574.00	$9,985.00
Charter Public School (1 staff)	$3,411.50	$6,561.50

All Stars	Live Online provider training (Core)	On Site Training (Core)	Off site Workshops (Core)	Live Online Provider Training Training-Booster (7th grade)	Live Online Provider Training Training-Plus (8th grade)	Live Online Provider Training Training-Senior (HS)	On Site Training-Booster (7th grade)
Rural Regional (11 staff)	$5,468.00	$5,168.00	$4,918.00	$2,826.00	$3,136.00	$2,035.00	$2,676.00
Large Urban (67 staff)	$33,520.00	$22,420.00	$30,170.00	$16,943.00	$18,504.00	$12,395.00	$8,393.00
Urban (20 Staff)	$11,824.00	$8,824.00	$10,824.00	$6,574.00	$6,354.00	$3,700.00	$4,087.00
Suburban (12 Staff)	$6,660.00	$6,060.00	$6,060.00	$3,632.00	$3,718.00	$2,220.00	$2,896.00
Urban (20 staff)	$9,712.00	$6,712.00	$8,712.00	$5,396.00	$5,452.00	$3,700.00	$3,498.00
Charter Public School (1 staff)	$872.00	$3,572.00	$822.00	$351.00	$466.00	$185.00	$1,701.00

All Stars	On Site Training-Plus (8th grade)	On Site Training-Senior (up to 20 staff) (HS)	Off site Workshops-Booster (7th grade)	Off site Workshops-Plus (8th grade)	Off site Workshops-Senior (HS)	Total Cost for Live Online Provider Training for Core, Booster, Plus, and Senior	Total Cost for On Site Training for Core, Booster, Plus, and Senior	Total Cost for Off Site Workshops for for Core, Booster, Plus, and Senior
Rural Regional (11 staff)	$2,986.00	$1,885.00	$2,551.00	$2,558.00	$1,760.00	$13,465.00	$12,715.00	$11,787.00
Large Urban (67 staff)	$9,954.00	$3,845.00	$15,268.00	$16,829.00	$10,720.00	$81,362.00	$44,612.00	$72,987.00
Urban (20 Staff)	$4,854.00	$2,200.00	$5,087.00	$5,854.00	$3,200.00	$28,452.00	$19,965.00	$24,965.00
Suburban (12 Staff)	$3,418.00	$1,920.00	$2,896.00	$3,418.00	$1,920.00	$16,230.00	$14,294.00	$14,294.00
Urban (20 staff)	$3,526.00	$2,200.00	$4,498.00	$7,620.00	$3,200.00	$24,260.00	$15,936.00	$24,030.00
Charter Public School (1 staff)	$1,816.00	$1,535.00	$326.00	$323.00	$160.00	$1,874.00	$8,624.00	$1,631.00

**Travel and Lodging costs not included (for trainer or participant) Cost of curriculum does not include shipping and handling*

keepin' it REAL: Training Costs and Curriculum Units for a 2-year period (grades 7 and 8)	Grade 7 & Grade 8
Rural Regional (11 staff)	$1,000 training for staff + travel + small administrative fee for materials (~$50) + $1,000 for curriculum for 2 schools = **$2,050.00**
Large Urban (67 staff)	$1,000 training for staff + travel + small administrative fee for materials (~$50) + $3,000 for school set of curricula for 6 schools = **$4,050.00**
Urban (20 Staff)	$1,000 training for staff + travel + small administrative fee for materials (~$50) + $2,500 for school set of curricula for 5 schools = **$3,550.00**
Suburban (12 Staff)	$1,000 training for staff + travel + small administrative fee for materials (~$50) + $500 for school set of curricula = **$1,550.00**
Urban (20 staff)	$1,000 training for staff + travel + small administrative fee for materials (~$50) + $1,000 for curriculum for 2 schools = **$2,050.00**
Charter Public School (1 staff)	$1,000 training for staff + travel + small administrative fee for materials (~$50) + $500 for school set of curricula = $**1,550.00**
Note: *To meet the study requirements, the study group recommends implementation of high school curricula to accompany keepin' it REAL's Grade 7 and Grade 8 curriculum unit. As of November 2011, a high school curriculum to accompany keepin' it REAL's middle school program is currently under development.*	

APPENDIX D:

Members of the Work Group:

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APPENDIX E: Literature Review

Please visit the Massachusetts Department of Public Health website - http://www.mass.gov/eohhs/gov/departments/dph/ - to access the full literature review.